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ABSTRACT

Phonological awareness has little, if anything, to do with reading or the acquisition of literacy. Learned opinion has been divided as to the relationship of phonological awareness and reading. Some scholars hold that the ability to analyze speech into discrete phonic segments is a precursor to, even a cause of, successful reading acquisition, while others claim that it is a result of learning to deal with language in terms of an alphabetic script. Scholars do not agree on a definition of "reading" or of "phonological awareness." Numerous studies have shown that adult native speakers who are not literate are not able to perform phonological awareness tasks while readers of alphabetic scripts are able to do these tasks. Research has also shown that phonological awareness is a result, and a very limited one, of acquiring alphabetic literacy. While some studies attempt to show that phonological awareness training improves students' decoding skills, no study has demonstrated that phonological awareness improves/enhances/predicts a child's ability to understand a written text. Attempts to enhance reading skills in children by training in phonological awareness typically fail. It is surprising that the belief in a phonological basis for reading development and skill is so "stubbornly maintained" in the face of common sense and scientific evidence. (Contains 31 references and a table of data.) (RS)

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The Case Against Phonemic Awareness

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ABSTRACT

The purpose of this paper is to challenge the notion that phonological awareness plays a role in the acquisition and use of reading.

In recent years a great deal of attention has been devoted to the study of phonological awareness and its role in the acquisition and employment of reading skills. Learned opinion has been divided as to the relationship of phonological awareness and reading; some scholars holding that the ability to analyze speech into discrete phonic segments is a precursor to - even a cause of - successful reading acquisition, others claiming that it is a result of learning to deal with language in terms of an alphabetic script.

This paper will present evidence and argument to the effect that phonological awareness has very little, if anything, to do with reading or the acquisition of literacy.

To pursue an evaluation of the role of phonological awareness in reading, it is necessary to share a common understanding of the terms involved - i.e., reading and phonological awareness.

DEFINITION 1: READING

It would surely be surprising to an outsider to learn that scholars who specialize in the study of reading do not share a definition of the term, but such is the case. Some specialists define reading as the ability to sound out strings of letters (including strings that are nonsense); others follow the more common notion that reading involves understanding. Sally Shaywitz (Shaywitz, 1996) provides a clear example of the view that reading is the conversion of text to phonology (even stronger, that speech and writing are both "phonemic"). She defines impaired reading, dyslexia, as " a deficit within the language system at the level of the phonological module" that "impairs [a child's] ability to segment the written word into its underlying phonological components" (p.100) and follows the Bloomfieldian (Bloomfield, 1927) equation of writing and speech in her claim, that "phonemes, ... make up all spoken and written words." (p.98). Following this identification of writing as being written speech, Shaywitz is led to the

belief that, "Before words can be identified, understood, ..., they must be broken down ... into their phonemic units."(p.99)

To most people, however, reading refers to the comprehension of written language. The proverbial man-in-the-street, asked if he can read *ani rotzeh lishtot tapuzim*, would, if he doesn't know Hebrew, surely respond, "No". Or, he might reply, "I can sound it out, but I don't know what it means" - clearly indicating an understanding of the difference between reading and sounding out. This is the definition of reading to be used here. It not only is the ordinary rendering of the word, but it is the usage of such scholars as David Olson (Olson, 1977), Frank Smith (Smith, 1986), John Carroll (Carroll, 1972) and many, many others.

More formally, these are the understandings of the terms writing and reading as they are employed in the exposition to follow:

Writing is a graphic representation of linguistic constructs.

If a graphic representation can be understood without knowledge of a specific language, the representation is not writing, it is a picture.

The linguistic entities represented in writing are the constructs that relate to meaning or function; constructs such as word and morpheme. See Ranko Bugarski (Bugarski, 1970; 1993) for more on this point - specifically, to the observation that, in its representation of linguistic constructs, a writing system can be seen as a descriptive grammar of the language it engraphs.

Reading is the conversion of written linguistic constructs to meaning; i.e., comprehension.

With this understanding of the word reading in mind, we can incorporate into our considerations such phenomena as "silent reading" (not of much interest from the reading as sounding out definition), and we can focus attention in reading research on the stages and processes by means of which children acquire the ability to derive meaning from text (also not of

interest from the sounding out point of view).

DEFINITION 2: PHONOLOGICAL AWARENESS

There are two very different abilities known as **phonological awareness**. One is the ability to isolate and manipulate syllabic segments of speech. Syllabic units include vowels (V) and consonant-vowel combinations (CV, VC, CVC). This skill may be termed **Syllabic Awareness**.

The other is the ability to isolate and manipulate (sub-syllabic) segmental phones. This skill is often termed **Phonemic Awareness**. It would be more properly termed **Phonetic Awareness** as phonemes are abstract constructs of linguistic description and are not necessarily audible (Sapir, 1949). In general, studies that explore subjects' awareness of individual speech sounds involve the manipulation of acoustically overt segments, not their ability to conceptualize speech in terms of rational constructs - that is, they may be asked to delete the [p] sound from 'spin', but they are not asked to show that they are cognizant of the fact that post-s [p] is an allophone of the phoneme /p/ (even though it sounds like [b]) or they may be asked to add a [k] sound to 'it' but are not asked to show awareness of the fact that the very distinct [k] sounds of 'key', 'cup', and 'cop' are all allophones of the phoneme /k/. To avoid this terminological muddle, this ability to manipulate individual segmental speech sounds will be referred to as **Phonetic Segment Awareness, PSA**.

Although there are important reasons for distinguishing between syllabic phonological awareness and segmental phonetic awareness, this distinction will not affect the arguments presented here. Nevertheless, it may be of interest to point out why the distinction is generally vacuous in the context of "phonemic awareness". One of the more popular tests of phonological awareness involves an experimenter orally presenting a word (sometimes nonsense) and a stop

consonant and asking the subject what result is obtained if that consonant is deleted from that word - for example, what do you get if you take [p] away from 'plowed'. The problem with this procedure is that stop consonants cannot be articulated in isolation. A voiceless stop is just that - there is no sound, and for a voiced stop there is only a very brief murmur. When the "sounds" of the word 'cat' are produced in isolation, what is necessarily articulated is a sequence of three syllables, viz. [kə] [ae] [tə] (usually with the schwa after [t] devoiced). Consequently, much of the research on "phoneme deletion" cannot be distinguished from studies of syllable manipulation. (There is a way to overcome this problem, at least with adult subjects, and this will be presented below.)

READING AND PHONOLOGICAL AWARENESS: THE CURRENT DEBATE

The relationship between reading and phonological awareness has largely been debated in terms of a dichotomy involving causality; i.e., what causes what. The two sides of this debate are:

1) Phonological awareness precedes reading skill and is a contributor to success in learning to read.

2) Phonological awareness is a consequence of alphabetic literacy.

The precursor position is found in, for example, the work of Tumner and colleagues (Tumner, Pratt, and Harriman, 1984) and others using a "tapping task" where, following some training, children are asked to "tap out" the number of phonetic segments in a stimulus word. Despite misgivings as to exactly what is being assessed (due to her awareness that phonemes can't be physically segmented within the stream of speech) Marilyn Adams (Adams, 1990) concludes that "... the kind of phonemic awareness assessed by the tapping task appears to be a cause of early reading proficiency ..." (P. 70).

Proponents of the consequence view include Dale, Crain-Thoreson, and Robinson (1995)

whose studies of reading ability in linguistically precocious children are, they say, "... strongly supportive of the view that phonemic awareness is largely the result of learning to read in even the earliest stages." (p. 180-1). Their review of their own as well as similar research leads them to conclude that, "... phonemic awareness skills, ..., generally develop only in response to literacy experience, whether home or school based..." (p. 183)

Other claims for the consequence view are found in the work of Ignatius Mattingly and Bruce Derwing. Mattingly (1994), speaking of the Greek originators of the western alphabet, says, "It is doubtless true that these linguists, like most literate Westerners, originally acquired their notion of the phonemic segment through exposure to an alphabetic orthography. Thus, segmental awareness arose in the Greeks for the same reason it has in all their successors: as a result of exposure to what appeared to be a segmental writing system. There is no need to assume on anyone's part a prior, phonologically rather than orthographically based, segmental awareness."(p. 89) Derwing (Derwing, 1992)) argues convincingly that the phonology of literate speakers is heavily impacted by their orthographic experience and that reading and writing cannot be set aside as merely parasitic on speaking and listening.

This opposition between the "precursor" and the "consequence" views is beautifully illustrated in the writing of Marilyn J. Adams (Adams, 1990). Adams claims (1990, p. 306) that, "Importantly, our alphabetic script did not cause us to invent phonemes. To the contrary, it was their prior psychological reality that enabled us to invent the alphabet." And, on the very same page, she says, "The syllable is psychologically analyzable into phonemes, and this is obvious to us because (and perhaps *only because) we have learned an alphabetic script* [italics mine, RJS]."

There is a third position on reading and phonological awareness that could be taken,

namely:

3) Phonological awareness and reading skill are unrelated, independent abilities.

It is this third claim (in a modified form) that our considerations will lead us to adopt.

PHONOLOGICAL AWARENESS AND LITERACY IN ADULTS

Numerous studies have shown that adult native speakers who are not literate are not able to perform PSA tasks (typically, "phoneme deletion") while readers of alphabetic scripts - as early as third grade - are able to do these tasks. Bertelsen and de Gelder (1989), for example, review a number of studies of speakers of Portuguese, Belgian, Japanese, and Chinese demonstrating the absence of PSA in adult non-readers and readers of non-alphabetic scripts as well as its presence in persons who have learned to read alphabetic scripts as adults. Scholes and Willis (1987; 1991) document the absence of PSA in native English speaking non-readers as well as its presence in 3rd grade children who are succeeding in learning to read.

Such work clearly demonstrates that PSA is not an untutored component of the linguistic consciousness of speakers. Given this finding, it follows that PSA is not present in the pre-reading child and, therefor, cannot be considered a precursor of reading success. It does not show, of course, whether training in PSA might or might not help a child learn to read: that issue is dealt with below.

It is particularly instructive to look at PSA in literate adults. When literate adult speakers of English are asked to perform phonological tasks, their responses generally demonstrate that they conceptualize speech in terms of written form. Several investigators (Ehri and Wilce, 1986; Derwing, 1992; Scholes, 1993) have shown this in a number of ways. Subjects show spelling-based processing in counting sounds, for example, and judge words like 'tempt' and 'limped' to have more sounds than 'tent' and 'lint'; 'ditch' to have more sounds than 'rich', etc. When asked

to delete sounds, they find it less difficult to delete the [t] from 'witch' (= 'wish') than from 'which' (= 'wish').

In a recent study I asked university students (N=70) to delete sounds from words and report (write down) the results. In this experiment, I avoided the problem of being unable to articulate stop consonants by asking subjects to delete the Nth sound (i.e., the first sound, or the second sound, or the third sound, etc.). A trial was of the form: "What word to you get if you take the Nth sound away from the word 'X'; for example, "What word do you get if you take the 2nd sound away from the word 'frame'?

In some of the trials, the sound to be deleted bears a one-to-one relationship to a letter in the spelling of the word. Subjects did very well with these stimuli (Table 1, Set I). In other cases, the sound to be deleted does not correspond to a letter in the spelling of the word. Subjects performed poorly on these stimuli (Table 1, Set II).

[Table 1 goes here]

If PSA precedes or is independent of alphabetic literacy, then the items in Set II should be no more difficult than those in Set I. But they are - significantly so.

Moreover, these studies show that PSA is a consequence of alphabetic literacy in a very limited sense in that alphabetically literate speakers are aware of phonetic segments only when those segments bear a one-to-one correspondence with letters in spelling. To put it another way, when alphabetically literate speakers are asked to perform phonetic analyses they actually do letter analyses - the results will appear to demonstrate PSA when in fact they only demonstrate awareness of letters. Thus, asked to delete the [k] (or third sound) from 'liked' they report 'lied' (deletion of letter) more often than 'light' (deletion of sound) (in the study reported in Table 1, 'light' was the response for 13 of the 70 subjects, while 'lied' was the response of 30 of the 70

subjects).

I should perhaps also note here that studies of adult illiterates demonstrate that rhyming is perhaps not a good measure of PSA. Subjects reported in Scholes and Willis (1987) demonstrated the ability to distinguish syllables on the basis of relatively subtle phonetic differences, but no ability to isolate the phonetic segments involved in the distinction. They could, for example, distinguish 'flagrant' from 'fragrant' in a minimal pairs test, but could not delete the [r] from 'grow'. It does not follow, then, that a speaker who can identify rhymes can isolate the phonetic segment(s) that make up the rhyme.

It should also be noted that syllabic awareness, as opposed to the ability to isolate and manipulate segmental phones, appears to be within the linguistic consciousness of all speakers. (Peters, 1985). This would be expected on the grounds that syllables are acoustically overt, while segmental phones are not.

PHONOLOGICAL AWARENESS AND READING ACQUISITION

While it is abundantly clear that PSA is a result, and a very limited one, of acquiring alphabetic literacy, it might still be argued that instruction in PSA facilitates learning to read. Bertelsen and deGelder (1989), for example, note that it is quite conceivable that phonological reading is important or even necessary at some stage of reading development.

It is certainly not the case that phonological awareness is required for literacy. Eric Lenneberg (Lenneberg, 1962) reported a case of a person unable to speak from birth (congenital dysarthria) who attained quite high levels of literacy (see, also, Campbell and Butterworth, 1985), and congenitally profoundly hearing impaired individuals attain reading and writing skills. While the reading skills of the deaf are typically of a lower order (3rd grade reading level on average for high schoolers), this is the result of a general limitation on language acquisition rather than a

reading impairment *per se* (Scholes, Cohen and Brumfield, 1978; Russell, Quigley, and Power, 1976).

For normal children, however, there are numerous claims that phonological awareness relates positively to reading development; for example, Torgesen et al (1997) find that in their studies of 2nd to 5th grade children "...phonological awareness emerged as a unique predictor of reading growth." (P. 163)

Given the overwhelming evidence from studies of adult readers and non-readers that PSA is a (very limited) consequence of alphabetic literacy, what thought processes/evidence would lead one to conclude that it is a precursor or predictor or even cause of success in learning to read?

One might suppose that, since speech precedes writing both phylogenetically and ontogenetically, alphabetic writing is based on a (prior) phonic consciousness of speech (see Adams' claim above). If this were so, then spelling ought to reflect speech; that is, there should be correspondences between letters and sounds. English spelling ought, then, to be a type of phonetic transcription of speech - that for each letter there is one and only one sound and for each sound there is one and only one letter (the bi-uniqueness principle). Even the staunchest advocates of PSA as precursor to reading, however, realize that English orthography doesn't come close to meeting this condition. Consequently, studies of spelling-to-sound mappings (see, e.g., Gentile, Kamil, & Blanchard, 1983, p. 113 *passim*) have traditionally recognized the absence of hard and fast rules (that is, the kinds of relationships that are invariant and automatic - that could be formulated in the sense of a computer program for reading aloud) and have focused on "generalizations." Generalizations are taken to be letter (or letter group) to pronunciation correspondences that apply in some arbitrary percentage of the cases in which the spelling

matches the input to the generalization - for example, Clymer's (Clymer, 1963) rule 44, "When there is one *e* in a word that ends with a consonant, the *e* usually has a short sound" applied to 76% of the cases in the corpus he investigated of words having just one *e* and ending in a consonant (he notes the word "blew" as an exception). This less than complete application allows the use of the word "usually" in the generalization. As Clymer notes, many of the generalizations he investigated require that the reader already know a good deal about a word's pronunciation before the generalization can be applied - for example, several of the generalizations utilize stress, requiring that the reader already know which syllable is stressed (and, in fact, what the syllable divisions are). What he doesn't note is that many of the rules require additional knowledge other than stress and syllabicity of the reader. For example, consider generalizations 1 and 2:

1. When there are two vowels side by side, the long sound of the first one in heard and the second is usually silent

2. When a vowel is in the middle of a one-syllable word, the vowel is short; that is, when the vowel is:

    a. The middle letter

    b. One of the middle two letters in a word of four letters.

    c. One vowel within a word of more than four letters.

Rules 1 and 2 require prior knowledge of:

a. Which letters are vowels? This can be overtly taught (i.e., a,e,i,o, and u are vowels, but runs into some difficulty with w and y; see, also, vowels like i in -ti- and u in -qu-), but can not be assumed to be prior knowledge of any reader.

b. What is a long sound? Again, this can be taught, but it can not be assumed to be prior

knowledge of any reader.

c. When is a word a one-syllable word? Compare 'flower' and 'flour', 'quiet' and 'quite', 'diet' and 'died', etc.

d. What constitutes the "middle." While such a notion may seem trivial, studies of spatial words in children (e.g., Miao & Zhu, 1992) show that knowledge of the concept of "middle/center" comes fairly late in development and significantly later than such spatial concepts as "above" or "below."

Moreover, even if the instructee does know which letters are vowels, what the "long sound" of each vowel is, how to determine the number of syllables in a word (prior to pronunciation), and what constitutes the middle of a sequence of letters, these generalizations are of limited applicability (generalization 1 applied to 45% of the potential cases - cf. 'bead' vs. 'chief'; 2a applied in just 62% of the cases - cf. 'dress vs scold'; 2b in 59% - cf. 'rest' vs 'told'; and 2c. in 46% - cf. 'splash' vs 'fight').

It may be instructive to look at some results of readers who attempt to apply grapheme-phoneme generalizations without fully understanding all the exceptions and nuances. In her study of errors made in reading aloud single words by poor readers, Jane Holmes (Holmes, 1978) found they misapplied the generalizations of *g* ('beggar' pronounced like 'badger', 'logic' pronounced as 'loggy' or 'logos', 'strength' pronounced as 'strange'), *c* ('cactus' read as 'kastus', 'delicious' pronounced 'delikus', 'certain' read as 'carton'), cases in which readers assigned phonetic values to "silent' consonants (as in 'bristle' read 'bristol', 'calm' read as 'column', and - a most interesting case - 'debt' read as 'debit' - the *b* is in the spelling precisely because of the word's relationship to 'debit'), and many others. What Holmes' data show is what happens when someone doesn't know what the word is and attempts to apply grapheme to

phoneme correspondences - it doesn't work.

The fact of the matter is that pronunciation rules apply to words, not to letters or letter groups. Reading aloud is done by knowing (or having someone tell you) how each word of a text is to be vocally articulated. In this sense (as in the sense of reading as comprehension of visual language) there is no difference of any great import between reading the alphabetic orthography of English and the ideographic orthography of classical Chinese - a fact pointed out many years ago by John Carroll (Carroll, 1972).

One might define "reading" in such a way as to insure that PSA plays a part. This is the essence of the notion of decoding. In such studies, the investigator typically shows that a child's ability to sound out strings of letters (words or even nonsense "words") is enhanced by PSA training. But this decoding skill has nothing to do with reading as reading is normally understood (and defined above). That is, no one, to my knowledge, has shown that PSA (tutored or untutored) improves/enhances/predicts a child's ability to understand a written text.

In case the distinction between decoding ("sounding out") and reading aloud is not clear, let me offer a description.

Decoding is the ability to treat strings of letters as phonetic transcription. That is, to assign to each letter a phonetic value; as illustrated in "sounding out" SUMETHONKILD as [sumɛθɔnkɪld] or AKEADDOBEN as [ɑkejɑdobɛn] (which is how my graduate students pronounced these strings).

Reading aloud, in contrast, is the process of recovering a word from graphic input and then pronouncing the spoken form of that word; as illustrated in pronouncing SOMETHINGOLD as 'something old' or 'some thin gold' and AREALLOVER as 'are all over' or 'a real lover'.

That is, reading aloud requires a prior identification of the linguistic constructs (words, in

this case) before pronunciation can be performed. There is, however, a form of writing in which pronunciation must precede comprehension. This is known as "written speech" and is practiced as a joke by the linguistically sophisticated, as in this Valentine's Day greeting, BEAM EYE BALE AND TYNE BE COURSE ISLE OF EWE or as errors by the less practiced writer; e.g., 'intense of purpose', 'his a good athlete', 'firstable', 'she would of', 'your a good person', 'their nice'.

Phonological awareness, then, may well correlate highly with a child's ability to sound out words or nonsense strings of letters (provided that the spellings of the words and nonsense strings meet the conditions of letter-to-sound correspondence illustrated in the studies of adults presented above). This, however, has no demonstrable relationship to understanding a written text.

Such a correlation follows, it seems to me, from initial reading instruction - where children are taught in a variety of ways that Bloomfield was right, that to understand writing you have to first convert it to speech. But children are smarter than that; in a relatively short time, they (at least most of them) realize that writing is not like speech. One of the best illustrations of this progression is a study by Doctor and Coltheart (1980) involving children's ability to detect nonsense in printed sentences. Children aged six through ten were asked to say whether printed sequences made sense or not. In some of these sequences, words were represented such that the written form is nonsense, but if the form is pronounced a sensible expression results. Such a case is: "he ran threw the streets."

Doctor and Coltheart found that such graphically incorrect/phonologically correct expressions were judged to be nonsense increasingly over age; i.e., at age six 70% of the subjects said the sentence was correct, at age seven 44% judged it correct, at eight 32%, at nine 29%, and

at ten 21%.

These results show two things: first, they show that the instruction teaching kids to deal with writing as though it were speech largely fails - as children increase their reading levels and skills they become less willing to utilize phonological data to process writing (Note very well: if the children did in fact learn to comprehend writing by sounding out the text prior to comprehension, their acceptance of the sensibility of such sentences should increase, not decrease over age; after all, 'he ran threw the streets' is a perfectly good way to write it if we are to rely on pronunciation). The authors noted this in concluding that very young readers rely extensively on phonological recoding when reading for meaning: as they grow older, reliance on visual encoding becomes progressively more important. (Because, of course, they realize that the phonologizing strategy doesn't work.) Secondly, the fact that the developmental curve asymtotes at age nine (approximately end of the 3rd grade) shows that not all children fully gain the knowledge that speech and writing are fundamentally distinct ways of representing language (Scholes, 1997). The 20 to 30 percent of the nine and ten year olds who continue to regard "threw" as a perfectly good way of writing "through" is entirely consistent with the similar percentage of adult readers and writers of English who maintain an indentification of writing with speech (Scholes and Willis, 1990) and consistently write such things as 'she would of', 'their no good', 'his a good guy', etc.

SUMMARY AND CONCLUSION

Given the evidence and argument presented here, it is not surprising that attempts to enhance reading skills in children by training in phonological awareness typically fail. Torgensen, Wagner, and Rashotte (1997) note that, "We still do not have convincing evidence that the relative differences in growth of phonetic reading skills produced by certain instructional

approaches lead to corresponding advantages in orthographic reading skills and reading comprehension for children with phonologically based reading disabilities." (230) Likewise, Olson, at al (1997) report that in their studies of at risk children those who received explicit training in phonological analysis failed to show an advantage over control groups on word recognition on 2-year follow up tests. Relative to the grapheme-phoneme mispronunciations reported by Holmes (discussed above), Olson et al observe that, " children who inflexibly apply their phonological decoding skills will often misread visually unfamiliar words that do not follow the most common grapheme-phoneme correspondence rules" (250) since "Children, especially those with learning disabilities, will learn what they are trained to do." (251)

What is surprising is that the belief in a phonological basis for reading development and skill is so stubbornly maintained in the face of so much common sense and scientific evidence. Olson et al, for example, suggest that training in exceptions is may be needed in order to show a correspondence between early phonological training and later reading skill. Training in exceptions is, of course, training in the knowledge that grapheme-phoneme conversion doesn't work. Torgesen, Wagner, and Rashotte cling to the belief by faulting their own research methodology (rather that the underlying assumption of the research) in suggesting that "increased intensity of instruction and improvements in general instructional procedures" among other things, might yield a correspondence between phonological awareness training and reading skill. (231-32)

The fact of the matter is that written and spoken English have very little in common with respect to the way the linguistic constructs of the language are represented (Scholes, 1997). While speech is unsegmented, transient, and sequential, English orthography is segmented on a number of levels, non-sequential in the sense that it can be scanned in any direction, and

permanent. Writing utilizes a number of ways of signalling meaning and function that have no counterparts in speech. The spaces that mark words, spelling, the use of miniscule and majiscule letters, and critical marks such as commas and apostrophes have no spoken analogues (Bradley, 1913). There are no graph to sound rules that can map "she would have done it if she could have" onto [ʃidədənɪtfʃikʊdə]. Such disparate representations are related at the semantic level only and it is only their identity of meaning that makes them both English.

There are no truely phonetic writing systems, nor should there be. The purpose of an orthography is very different from that of a phonetic system. Orthographies are meant to convey meaning and they succeed in doing so by ignoring variations of dialect and idiosyncratic speech. Written English is standard in spelling and punctuation, while spoken English varies dramatically from group to group and individual to individual. As a consequence, orthography favors no regional or ethnic or economic dialect and, conversely, creates no literacy inequality.

If someone wishes to show that PSA is a cause or facilitator of reading (as reading is understood here - reading for meaning) it will be necessary to show that a child's ability to conceptualize speech as a sequence of discrete phonic segments (whether tutored or untutored, syllabic or sub-syllabic) facilitates the acquisition of reading comprehension skill. Before such a study is attempted, it may be worth considering this question: Of the thousands of people who have received training in phonetic analysis and transcription, has anyone ever reported that it made them a better reader?

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Stimulus	Response N=70	
Delete the 1st sound from 'grow'		
[gro] - [g] = [ro] 'row'	65/70	93%
Delete the 2nd sound from 'frame'		
[frem] - [r] = [fem] 'fame'	68/70	97%
Delete the 1st sound from 'stable'		
[stebl] - [s] = [tebl] 'table'	58/70	83%
Delete the 4th sound from 'stable'		
[stebl] - [b] = [stel] 'stale'	60/70	86%
Set I: Sound = Letter	251/280	90%
Delete the 4th sound from 'placed'		
[plest] - [s] = [plet] 'plate'	11/70	16%
Delete the 3rd sound from 'faxed'		
[faekst] - [k] = [faest] 'fast'	8/70	10%
Delete the 4th sound from 'faxed'		
[faekst] - [s] = [faekt] 'fact'	4/70	6%
Delete the 3rd sound from 'liked'		
[laikt] - [k] = [lait] 'light'	13/70	19%
Set II: Sound not = letter	36/280	12%

Table 1.